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(54) SOFT NONWOVEN FABRIC

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a soft nonwoven fabric having sufficiently high mechanical strengths and both good softness and fluffing resistance with good balance therebetween, besides having excellent spinnability, extensibility and embossability.

SOLUTION: This soft nonwoven fabric comprises conjugate fibers each composed of a propylene-based resin (A) continuously forming in the length direction at least part of the fiber surface and a 2nd propylene-based resin (B) forming the other part in the weight ratio (A)/(B) of (80:20) to (20:80); wherein the propylene-based resin (A) comprises (1) a propylene homopolymer or propylene-based random copolymer of propylene and ethylene and/or a 4-8C α -olefin and (2) a propylene based block copolymer composed of a (a) 20-70 wt.% of a fraction insoluble to 25° C n-decane as a polypropylene component \leq 10 mol% in the ethylene and/or 4-8C α -olefin unit content and (b) 80-30 wt.% of a fraction soluble to 25° C n-decane as a copolymer rubber component 20-70 mol% in the ethylene and/or 4-8C α -olefin unit content in specific proportions.

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CLAIMS

[Claim(s)]

[Claim 1] The homopolymer of a propylene or ethylene, and/or a propylene system random copolymer with the alpha olefin of carbon numbers 4-8 (1) 50 - 95 % of the weight, (2) and (a) Ethylene and/or the alpha olefin unit content of carbon numbers 4-8 Less than [10 mol %], A melt flow rate consists of a polypropylene component which are 20-200g / 10 minutes. A fraction (I) insoluble to n-Deccan 25 degrees C is 20 - 70 % of the weight. (b) Ethylene and/or the alpha olefin unit content of carbon numbers 4-8 20-70-mol %, Limiting viscosity [eta] consists of the propylene of 2.0 or less dl/g, ethylene, and/or a copolymer rubber component with the alpha olefin of carbon numbers 4-8. A fraction (II) meltable to n-Deccan 25 degrees C is 80 - 30 % of the weight. The propylene system resin which contains a propylene system block copolymer at 50 - 5% of the weight of a rate (the sum total of a component (1) and a component (2) is 100 % of the weight), and continues and forms a part of fiber front face [at least] in the die-length direction (A), fiber — others — a part — forming — **** — a propylene — a system — resin — (— B —) — from — becoming — a propylene — a system — resin — (— A —) — a propylene — a system — resin — (— B —) — weight — a ratio — [— (— A —) — / — (— B —) —] — 80 — / — 20 - 20 — / — 80 — it is — a bicomponent fiber — from — constituting — having — becoming — flexibility — a nonwoven fabric .

[Claim 2] The flexibility nonwoven fabric according to claim 1 whose alpha olefin unit content of the ethylene and/or the carbon numbers 4-8 of the propylene system random copolymer contained to said propylene system resin (A) is less than [10 mol %].

[Claim 3] The flexibility nonwoven fabric according to claim 1 or 2 with which a propylene homopolymer or an ethylene structural unit consists [said propylene system resin (B)] of a propylene ethylene random copolymer not more than 10 mol %.

[Claim 4] The flexibility nonwoven fabric according to claim 1 to 3 which is the sheath-core mold bicomponent fiber formed from the sheath which said bicomponent fiber becomes from propylene system resin (A), and the core part which consists of propylene system resin (B).

[Claim 5] The flexibility nonwoven fabric according to claim 1 to 4 whose nonwoven fabric is a span bond nonwoven fabric.

[Claim 6] The disposable diaper member which consists of a flexibility nonwoven fabric according to claim 1 to 5.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the nonwoven fabric which is excellent in flexibility. It is related with the flexibility nonwoven fabric which it comes to consist of bicomponent fibers in more detail.

[0002]

[Description of the Prior Art] In recent years, since a nonwoven fabric has permeability and flexibility, it is used for various applications, and the application is expanded. Therefore, while various kinds of properties are searched for according to the application, improvement in the further property is demanded.

[0003] In the field of health material, such as a disposable diaper, both the flexibility of a nonwoven fabric and hair-proof Hadachi nature (abrasion resistance) are properties demanded. In order to raise flexibility, without spoiling hair-proof Hadachi nature, there are an approach of changing into the thing made from a propylene copolymer the span bond nonwoven fabric made from polypropylene used so far as an approach tried conventionally, the approach of using configuration fiber as the bicomponent fiber of polyethylene and polypropylene, etc.

[0004] However, the nonwoven fabric which generally raised flexibility has a problem of fuzz or a cone, and flexibility and hair-proof Hadachi nature are conflicting properties. Therefore, it could be satisfied with flexibility and the property of both hair-proof Hadachi nature, and development of the nonwoven fabric which was collectively excellent also in spinning nature, extensibility, and embossing nature was desired.

[0005]

[Problem(s) to be Solved by the Invention] In this invention, while having sufficient reinforcement, let it be a technical problem for both flexibility and hair-proof Hadachi nature to offer the flexibility nonwoven fabric which was good, maintained those balance and was collectively excellent in spinning nature, extensibility, and embossing nature.

[0006]

[Means for Solving the Problem] According to this invention, the homopolymer of (1) propylene, Ethylene and/or a propylene system random copolymer with the alpha olefin of carbon numbers 4-8 Or 50 - 95 % of the weight, (2) and (a) Ethylene and/or the alpha olefin unit content of carbon numbers 4-8 Less than [10 mol %], A melt flow rate consists of a polypropylene component which are 20-200g / 10 minutes. A fraction (I) insoluble to n-Deccan 25 degrees C is 20 - 70 % of the weight. (b) Ethylene and/or the alpha olefin unit content of carbon numbers 4-8 20-70-mol %, Limiting viscosity [eta] consists of the propylene of 2.0 or less dl/g, ethylene, and/or a copolymer rubber component with the alpha olefin of carbon numbers 4-8. A fraction (II) meltable to n-Deccan 25 degrees C is 80 - 30 % of the weight. The propylene system resin which contains a propylene system block copolymer at 50 - 5% of the weight of a rate (the sum total of a component (1) and a component (2) is 100 % of the weight), and continues and forms a part of fiber front face [at least] in the die-length direction (A), fiber — others — a part — forming — *** — a propylene — a system — resin — (— B —) — from — becoming — a propylene — a system — resin — (— A —) — a propylene — a system — resin — (— B —) — weight — a ratio — [— (— A —) — / — (— B —) —] — 80 — / — 20 - 20 — / — 80 — it is — a bicomponent fiber — from — constituting — having — becoming — flexibility — a nonwoven fabric — providing — having .

[0007] In the above-mentioned nonwoven fabric, the mode which a propylene homopolymer or an ethylene structural unit becomes [said propylene system resin (B)] from the propylene ethylene random copolymer not more than 10 mol % is a mode with desirable this invention.

[0008] Moreover, in this invention, the nonwoven fabric which consists of sheath-core mold bicomponent fibers formed from the sheath which said bicomponent fiber becomes from propylene system resin (A), and the core part which consists of propylene system resin (B) is the desirable mode of this invention.

[0009] By this invention, the disposable diaper member which consists of the aforementioned flexibility nonwoven fabric is offered.

[0010]

[Embodiment of the Invention] Hereafter, the flexibility nonwoven fabric concerning this invention is explained to a detail. The flexibility nonwoven fabric concerning this invention consists of bicomponent fibers which consist of propylene system resin (A) which forms a part of fiber front face [at least], and propylene system resin (B) which forms other parts of fiber.

[0011] Propylene system resin (A)

The propylene system resin (A) used by this invention The homopolymer of (1) propylene, Ethylene and/or a

propylene system random copolymer with the alpha olefin of carbon numbers 4-8 Or 50 - 95 % of the weight, (2) and (a) Ethylene and/or the alpha olefin unit content of carbon numbers 4-8 Less than [10 mol %], A melt flow rate (based on MFR and ASTM D1238, it measures at 2.16kg temperature of 230 degrees C of loads) consists of a polypropylene component for 20-200g / 10 minutes. A fraction (I) insoluble to n-Deccan 25 degrees C is 20 - 70 % of the weight. (b) Ethylene and/or the alpha olefin unit content of carbon numbers 4-8 20-70-mol %, Limiting viscosity [eta] consists of the propylene of 2.0 or less dl/g, ethylene, and/or a copolymer rubber component with the alpha olefin of carbon numbers 4-8. The fraction (II) meltable to n-Deccan 25 degrees C contains the propylene system block copolymer which is 80 - 30 % of the weight at 50 - 5% of the weight of a rate (the sum total of a component (1) and a component (2) is 100 % of the weight).

[0012] In a component (1), the crystalline gay polypropylene with which an isotactic index exceeds 90 preferably, for example can be used as a propylene homopolymer. As for the alpha olefin unit content of the ethylene and/or the carbon numbers 4-8 of a propylene system random copolymer, less than [10 mol %] is desirable, and it is still more desirable. [0.05-10 mol% of]

[0013] As an alpha olefin of carbon numbers 4-8 used here, it is the alpha olefin of the shape of a straight chain, and the letter of branching, and 1-butene, 1-pentene, 1-hexene, 1-octene, and 4-methyl-1-pentene are raised as a desirable example. Especially in these, 1-butene is desirable.

[0014] MFR (based on ASTM D1238, it measures at 2.16kg temperature of 230 degrees C of loads) of the component (1) which consists of the homopolymer of a propylene or ethylene, and/or a propylene system random copolymer with the alpha olefin of carbon numbers 4-8 has desirable 20 - 200g / 10 minutes, and its 150g / [further 30 -] 10 minutes are desirable.

[0015] The propylene system block copolymer of a component (2) is preferably contained at 10 - 30% of the weight of a rate five to 50% of the weight in propylene system resin (A). Among those, ethylene and/or the alpha olefin unit content of carbon numbers 4-8 are less than [10 mol %], and in 25 degree-C n-Deccan which consists of a polypropylene component which are 20 - 200g / 10 minutes, MFR is an insoluble solution component and contains a fraction (I) at 20 - 70 % of the weight in a propylene system block copolymer.

[0016] On the other hand, in 25 degree-C n-Deccan which 20 - 70-mol % and limiting viscosity [eta] are 2.0 or less dl/g, and consists of a propylene, ethylene, and/or a copolymer rubber component with the alpha olefin of carbon numbers 4-8, ethylene and/or the alpha olefin unit content of carbon numbers 4-8 are meltable solution components, and contain a fraction (II) at 80 - 30 % of the weight in a propylene system block copolymer.

[0017] Here, as an alpha olefin of carbon numbers 4-8 used of a component (2), it is the alpha olefin of the shape of a straight chain, and the letter of branching, and 1-butene, 1-pentene, 1-hexene, 1-octene, and 4-methyl-1-pentene are raised as a desirable example. Especially in these, 1-butene is desirable.

[0018] This propylene system block copolymer consists of the above, a fraction (I), and a fraction (II). The manufacture approach is in the condition which fused both, and can be manufactured by the successive polymerization which is mixed mechanically or is performed at two processes using catalysts for olefin polymerization, such as Ziegler-Natta catalyst or a metallocene system catalyst.

[0019] While spinning nature is good since a fraction (I) and a fraction (II) can be mixed with sufficient dispersibility if it is the above propylene system block copolymers, it excels also in the flexibility of the nonwoven fabric which consists of obtained fiber.

[0020] Propylene system resin (B)

as propylene system resin (B) — the homopolymer of a propylene, or a propylene — a principal component — carrying out — the carbon numbers 2, such as this, ethylene, 1-butene, 1-pentene, 1-hexene, 1-octene, and 4-methyl-1-pentene, thru/or 20 — a copolymer with the alpha olefin of 2 thru/or 8 is used preferably, and these are one-sort independent or are used combining two or more sorts.

[0021] What an ethylene structural unit becomes from the propylene ethylene random copolymer not more than 10 mol % in that the nonwoven fabric which spinning nature is good, is excellent in productivity, and has good flexibility also in these is obtained is desirable. In this invention, good spinning nature does not produce the thread breakage during the discharge from a spinning nozzle, and a drawing, but means that the welding of a filament does not arise. As for MFR (based on ASTM D1238, it measures at 2.16kg temperature of 230 degrees C of loads) of propylene system resin (B), it is desirable that they are 20 - 200g / 10 minutes, and it is desirable that they are 150g / [further 30 -] 10 minutes.

[0022] furthermore, the ratio of the weight average molecular weight (Mw) and number average molecular weight (Mn) of this propylene system resin (B) — Mw/Mn is usually 1.5-5.0. Spinning nature is good and 1.5-3.0 are desirable at the point that the bicomponent fiber in which especially fiber reinforcement is excellent is obtained. In this invention, Mw/Mn is measured by GPC (gel permeation chromatography) by the usual approach.

[0023] The bicomponent fiber which constitutes the flexibility nonwoven fabric of this invention consists of above-mentioned propylene system resin (A) and propylene system resin (B), and propylene system resin (A) continues in the die-length direction in a part of fiber front face [at least], and it forms. Thereby, in addition to the flexibility of propylene system resin (A) resin, and extensibility, reinforcement and spinning nature can be raised.

[0024] The sheath-core mold bicomponent fiber which uses propylene system resin (B) as a core part, and uses propylene system resin (A) as a sheath as such a bicomponent fiber, or the side-by-side mold bicomponent fiber which consists of the propylene system resin (A) section and the propylene system resin (B) section is desirable. Especially, a sheath-core mold bicomponent fiber is desirable. In this invention, a sheath-core mold bicomponent fiber may be which gestalt of the concentric type wrapped in the sheath of the shape of a doughnut to which the

core part of a circle configuration makes the heart the same, the eccentric mold with which the heart of a core part and a sheath shifts, and the core part is wrapped in the sheath, or the parallel connected type with which the core part which carried out eccentricity is not thoroughly wrapped in a sheath in a fiber cross section.

[0025] a bicomponent fiber — inside — a propylene — a system — resin — (— A —) — a propylene — a system — resin — (— B —) — weight — a ratio — [— (— A —) — / — (— B —) —] — 80 / 20 — 20/80 — it is — the point of flexibility — desirable — the point of 80 / 20 — 50/50, reinforcement, and spinning nature — desirable — 50 / 50 — 20/80 — it is .

[0026] In the bicomponent fiber used by this invention, other components may be contained if needed in the range which does not spoil the object of this invention in addition to said propylene system polymer.

[0027] As other components, a well-known heat-resistant stabilizer, a weathering stabilizer, various stabilizers, an antistatic agent, a slipping agent, an anti blocking agent, an antifogger, lubricant, a color, a pigment, natural oil, synthetic oil, a wax, etc. are mentioned for example, conventionally.

[0028] As a stabilizer, for example Antioxidant; tetrakis [methylene-3-(3, 5-G t-butyl-4-hydroxyphenyl) propionate] methane, such as 2,6-di-tert-butyl-4-methylphenol (BHT), beta-(3, 5-G t-butyl-4-hydroxyphenyl) propionic-acid alkyl ester, 2 and 2' screw [- oxamide] [ethyl-3- (3, 5-G t-butyl-4-hydroxyphenyl)] propionate, The phenolic antioxidant of Irganox 1010 (hindered phenolic antioxidant: trade name) etc.; Zinc stearate, Fatty-acid metal salts, such as calcium stearate, 1, and 2-hydroxy calcium stearate; Glycerol monostearate, Polyhydric-alcohol fatty acid ester, such as glycerol distearate, pentaerythritol monostearate, pentaerythritol distearate, and pentaerythritol tristearate, etc. can be mentioned. Moreover, it can also use combining these.

[0029] Moreover, bulking agents, such as a silica, diatomaceous earth, an alumina, titanium oxide, magnesium oxide, pumice powder, pumice balun, an aluminum hydroxide, a magnesium hydroxide, basic magnesium carbonate, a dolomite, a calcium sulfate, potassium titanate, a barium sulfate, calcium sulfite, talc, clay, a mica, asbestos, a calcium silicate, a montmorillonite, a bentonite, graphite, aluminium powder, and a molybdenum sulfide, may be contained.

[0030] It is mixable using the approach that a propylene system polymer and the arbitration component used if needed [other] are well-known.

[0031] Both the nonwoven fabrics that consist of a bicomponent fiber of the above-mentioned propylene system polymer of this invention are excellent in flexibility and hair-proof Hadachi nature. Various well-known approaches can be used as an approach of obtaining the nonwoven fabric which consists of fiber of the above-mentioned propylene system polymer of this invention. As a manufacturing method of the nonwoven fabric concerning this invention, although any, such as dry process, a wet method, the span bond method, and the melt blowing method, are sufficient, productivity is good, it is the point that the thing of high intensity is obtained, and the span bond method is desirable.

[0032] In the nonwoven fabric of this invention, the fineness of the bicomponent fiber which consists of a propylene system polymer is usually 5.0 deniers or less, is the point that the nonwoven fabric which was more excellent in flexibility is obtained, and is 3.0 deniers or less preferably.

[0033] the amount of eyes of the flexibility nonwoven fabric which consists of bicomponent fibers which consist of a propylene system polymer of this invention — usually — 3 — 100 g/m² — it is 7 — 30 g/m² preferably.

[0034] If manufacture of the span bond nonwoven fabric of this invention is explained taking the case of the nonwoven fabric which consists of a sheath-core mold bicomponent fiber The propylene system polymer (B) which constitutes the heart of a sheath-core mold bicomponent fiber, and the propylene system polymer (A) which constitutes a sheath Fuse with an extruder etc. separately, respectively, it is made to breathe out from the spinneret which has the compound spinning nozzle constituted so that the regurgitation of the sheath-core structure of a request of each melt might be formed and carried out, and the compound continuous glass fiber of a sheath-core mold is made to spin. Tension is applied to continuous glass fiber and it considers as predetermined fineness, and uptake is carried out and predetermined thickness is made to cool the spun compound continuous glass fiber with a cooling fluid, and to deposit on an uptake belt as it is by drawing air further. Subsequently, the confounding processing by the means of needle punch, a water jet, an ultrasonic seal, etc. or the thermal melting arrival by the heat embossing roll performs. In the case of the thermal melting arrival by the heat embossing roll, the rate of embossing area of an embossing roll is decided suitably, but 5 — 30% is usually desirable.

[0035] The nonwoven fabric concerning this invention obtained as mentioned above is excellent also in heat-sealing nature, reinforcement, and spinning nature, and is a nonwoven fabric with good hair-proof Hadachi nature while it is excellent in flexibility and extensibility. This nonwoven fabric is used suitable for industrial applications, such as medical application, an object for health material, and a packing material, and is especially used preferably as a member of a disposable diaper.

[0036]

[Example] The measuring method in this example is shown below.

(1) Measurement of a KOSHI value (assessment of flexibility)

By the KES-FB system made from KATO Tech, measurement of ***, shearing, compression, skin friction, and a bending test was performed, and the Measuring condition was performed on knitting high sensitivity conditions. It measured on knitting underwear (summer) conditions, and the above-mentioned result was made into the KOSHI value. A KOSHI value shows that flexibility is so good that the numeric value is small.

[0037] (2) Measurement of fuzz (brush trial) (wear-resistant assessment)

Based on JIS L1076, 25cm is extracted to a flow direction (MD), three test pieces of a 20cm nonwoven fabric are

extracted in a longitudinal direction (CD), and it pushes against the sample electrode holder of a brush and a sponge form testing machine instead of installation, a brush, and sponge at the felt, and rubs 200 times with the speed of 58min⁻¹ (rpm). The visual judgment of the sample after friction expressed the assessment result with the score by the following criteria. It is shown that there is so little fuzz that a numeric value is large.

5: fuzz nothing and 4: — almost — fuzz nothing and 3: — 1:fuzz with severe 2:fuzz as which fuzz is regarded a little is severe, and a tear is seen.

[0038] (3) With the differential scanning calorimeter (DSC) by measurement PerkinElmer, Inc. of the melting point, temperature up was carried out to 200 degrees C at the rate of 30 degrees C to 10 degrees C / min, and the melting point was measured.

(4) 25cm was extracted to the flow direction (MD) of the measurement nonwoven fabric of whenever [breaking extension], five 2.5cm nonwoven fabric test pieces were extracted in the longitudinal direction (CD), it is on condition that 100mm and speed-of-testing 100 mm/min between chucks, the tension test was performed, ductility (%) when a test piece fractures (load zero) was measured about the test piece of five sheets, and those averages were considered as whenever [breaking extension].

(5) Limiting viscosity [eta]

It measured in the 135-degree C decalin.

[0039] (6) Dissolve 2g of 145 degrees C of judgment propylene system block copolymers of a propylene system block copolymer by n-Deccan 400ml for 2 hours. subsequently, one whole day and night — after room temperature neglect — filtering — n-Deccan — an insoluble fraction (I) and n-Deccan — it separated into the meltable fraction (II). n-Deccan was removed from each fraction, and while computing the rate by having measured weight, it analyzed.

(7) It measured by alpha olefin unit content 1 H-NMR and 13 C-NMR.

[0040] The melting point of 162 degrees C and the gay polypropylene (HPP) for MFR=60g /, and 10 minutes are used as a core part. (Example 1) a propylene ethylene copolymer rubber component (fraction (II) and limiting viscosity [eta] = — 1.59 dl/g ethylene unit content % of 30 mols — 60 % of the weight and a polypropylene component (a fraction (I) —) 20 weight sections of the propylene system block copolymer (BPP) with which ethylene unit content % of 4.0 mols consists of 40 % of the weight the melting point of 140 degrees C, and 10 MFR=60g /, and minutes, Perform compound melt spinning which uses as a sheath mixture which consists of the 80 weight sections of said gay polypropylene (HPP), and the weight ratio of a core part and a sheath makes the sheath-core mold bicomponent fiber of 20/80 of these hearts deposit on an uptake side. Subsequently Heating pressure treatment (18% of rates of embossing area) of this was carried out with the embossing roll, and the span bond nonwoven fabric whose amount of eyes is the fineness of 3 deniers of 30g/m², and configuration fiber was produced. Whenever [fuzz, KOSHI value, and breaking extension] was measured and evaluated about the obtained nonwoven fabric. A result is shown in a table 1.

[0041] (Example 2) In the example 1, the nonwoven fabric was produced like the example 1 except having used as the sheath mixture which consists of the 30 weight sections of a propylene system block copolymer (BPP), and the 70 weight sections of gay polypropylene (HPP). The result evaluated about the obtained nonwoven fabric is shown in a table 1.

[0042] (Example 3) The nonwoven fabric was produced like the example 2 except having made the weight ratio of a core part and a sheath into 50/50. The result evaluated about the obtained nonwoven fabric is shown in a table 1.

(Example 4) The nonwoven fabric was produced like the example 2 except having made the weight ratio of a core part and a sheath into 80/20. The result evaluated about the obtained nonwoven fabric is shown in a table 1.

[0043] (Example 1 of a comparison) Perform melt spinning only using the same gay polypropylene (HPP) as an example 1, and the fiber of a mono-component was made to deposit on an uptake side, subsequently, heating pressure treatment (18% of rates of embossing area) of this was carried out with the embossing roll, and the span bond nonwoven fabric whose amount of eyes is the fineness of 3 deniers of 30g/m², and configuration fiber was produced. Whenever [fuzz, KOSHI value, and breaking extension] was measured and evaluated about the obtained nonwoven fabric. A result is shown in a table 1.

[0044] Ten weight sections of a propylene system block copolymer (BPP) which used the same gay propylene (HPP) as an example 1 as the core part, and used it in the example 1, (Example 5) Propylene ethylene random copolymer (the melting point of 142 degrees C, and ten MFR=60g /, and parts) Perform compound melt spinning which uses as a sheath mixture which consists of the 90 weight sections of ethylene unit content 4.0 mol %:RPP1, and the weight ratio of a core part and a sheath makes the sheath-core mold bicomponent fiber of 20/80 of these hearts deposit on an uptake side. Subsequently Heating pressure treatment (18% of rates of embossing area) of this was carried out with the embossing roll, and the span bond nonwoven fabric whose amount of eyes is the fineness of 3 deniers of 30g/m², and configuration fiber was produced. Whenever [fuzz, KOSHI value, and breaking extension] was measured and evaluated about the obtained nonwoven fabric. A result is shown in a table 1.

[0045] (Example 6) In the example 5, the nonwoven fabric was produced like the example 5 except having used as the sheath component mixture which consists of the 20 weight sections of a propylene system block copolymer (BPP), and the 80 weight sections of a propylene ethylene random copolymer (RPP1). The result evaluated about the obtained nonwoven fabric is shown in a table 1.

(Example 7) In the example 5, the nonwoven fabric was produced like the example 5 except having used as the sheath mixture which consists of the 30 weight sections of a propylene system block copolymer (BPP), and the 70 weight sections of a propylene ethylene random copolymer (RPP1). The result evaluated about the obtained

nonwoven fabric is shown in a table 1.

[0046] (Example 2 of a comparison) Perform melt spinning only using the same propylene ethylene random copolymer (RPP1) as an example 5, and the fiber of a mono-component was made to deposit on an uptake side, subsequently, heating pressure treatment (18% of rates of embossing area) of this was carried out with the embossing roll, and the span bond nonwoven fabric whose amount of eyes is the fineness of 3 deniers of 30 g/m² and configuration fiber was produced. Whenever [fuzz, KOSHI value, and breaking extension] was measured and evaluated about the obtained nonwoven fabric. A result is shown in a table 1.

[0047] Ten weight sections of a propylene system block copolymer (BPP) which used the same gay propylene (HPP) as an example 1, as the core part, and used it in the example 1, (Example 8) Propylene ethylene random copolymer (the melting point of 138 degrees C, and ten MFR=60g /, and parts) Perform compound melt spinning which uses as a sheath mixture which consists of the 90 weight sections of ethylene unit content 5.0 mol %,RPP2, and the weight ratio of a core part and a sheath makes the sheath-core mold bicomponent fiber of 20/80 of these hearts deposit on an uptake side. Subsequently Heating pressure treatment (18% of rates of embossing area) of this was carried out with the embossing roll, and the span bond nonwoven fabric whose amount of eyes is the fineness of 3 deniers of 30g/m², and configuration fiber was produced. Whenever [fuzz, KOSHI value, and breaking extension] was measured and evaluated about the obtained nonwoven fabric. A result is shown in a table 1.

[0048] (Example 9) In the example 8, the nonwoven fabric was produced like the example 8 except having used as the sheath mixture which consists of the 20 weight sections of a propylene system block copolymer (BPP), and the 80 weight sections of a propylene ethylene random copolymer (RPP2). The result evaluated about the obtained nonwoven fabric is shown in a table 1.

[0049] (Example 10) In the example 8, the nonwoven fabric was produced like the example 8 except having used as the sheath mixture which consists of the 30 weight sections of a propylene system block copolymer (BPP), and the 70 weight sections of a propylene ethylene random copolymer (RPP2). The result evaluated about the obtained nonwoven fabric is shown in a table 1.

[0050] (Example 11) The nonwoven fabric was produced like the example 10 except having made the weight ratio of a core part and a sheath into 50/50. The result evaluated about the obtained nonwoven fabric is shown in a table 1.

(Example 12) The nonwoven fabric was produced like the example 10 except having made the weight ratio of a core part and a sheath into 80/20. The result evaluated about the obtained nonwoven fabric is shown in a table 1.

[0051] (Example 13) In the example 8, it replaced with the gay propylene (HPP) and the nonwoven fabric was produced like the example 8 except having used as the core part the propylene ethylene random copolymer (RPP1) used in the example 5. The result evaluated about the obtained nonwoven fabric is shown in a table 1.

[0052]

[A table 1]

プロピレン系樹脂 (A) <鞘部>												
	成分 (1)					成分 (2)					プロピレン系樹脂 (B) <芯部>	芯/鞘 (重量比)
	樹脂	融点 (°C)	MFR (g/10分)	エチレン単位含量 (wt%)	樹脂	ゴム成分量 (wt%)	融点 (°C)	MFR (g/10分)	エチレン単位含量 (wt%)	エチレン極限粘度 [η] (dl/g)	共重合体ゴム成分	成分比率 (1)/(2) (重量比)
実施例 1	HPP	162	60	0	BPP	60	140	60	4.0	1.59	30	80/20
実施例 2	HPP	162	60	0	BPP	60	140	60	4.0	1.59	30	70/30
実施例 3	HPP	162	60	0	BPP	60	140	60	4.0	1.59	30	70/30
実施例 4	HPP	162	60	0	BPP	60	140	60	4.0	1.59	30	70/30
比較例 1	HPP	162	60	0	—	—	—	—	—	—	—	100/0
実施例 5	RPP1	142	60	4.0	BPP	60	140	60	4.0	1.59	30	90/10
実施例 6	RPP1	142	60	4.0	BPP	60	140	60	4.0	1.59	30	80/20
実施例 7	RPP1	142	60	4.0	BPP	60	140	60	4.0	1.59	30	70/30
比較例 2	RPP1	142	60	4.0	—	—	—	—	—	—	—	100/0
実施例 8	RPP2	138	60	5.0	BPP	60	140	60	4.0	1.59	30	90/10
実施例 9	RPP2	138	60	5.0	BPP	60	140	60	4.0	1.59	30	80/20
実施例 10	RPP2	138	60	5.0	BPP	60	140	60	4.0	1.59	30	70/30
実施例 11	RPP2	138	60	5.0	BPP	60	140	60	4.0	1.59	30	70/30
実施例 12	RPP2	138	60	5.0	BPP	60	140	60	4.0	1.59	30	70/30
実施例 13	RPP2	138	60	5.0	BPP	60	140	60	4.0	1.59	30	90/10
											不織布評価結果	
											KOSHI 値	芯/鞘 (重量比)
											毛羽立ち	破断伸度 (MD) (%)
											9	20/80
											8	20/80
											8.5	50/50
											9	80/20
											11	—
											8.5	20/80
											7.5	20/80
											6.5	20/80
											9.5	—
											7.5	20/80
											6.5	20/80
											5.5	20/80
											6	50/50
											6.5	80/20
											7	20/80

[0053]

[Effect of the Invention] The flexibility nonwoven fabric which consists of bicomponent fibers which consist of a propylene system polymer of this invention is excellent in reinforcement, extensibility, and spinning nature, and both flexibility and its hair-proof Hadachi nature are good, and since balance is maintained, it can be used suitable for industrial applications, such as medical application, an object for health material, and a packing material, and is especially used preferably as a member of a disposable diaper.

[Translation done.]